

In the claims:

1-8 (canceled)

9. (previously presented) An apparatus for lifting substrates in a semiconductor packaging process, the apparatus comprising:

a plate with a plurality of protrusions;

a substrate tray with a plurality of depressions and a hole in each depression coupled to the plate, the substrate tray to hold a substrate in each depression;

a lifting device with a plurality of vacuum pads coupled to the substrate tray, the lifting device to attach to the substrates and lift the substrates out of the substrate tray;

a first actuator coupled to the plate, the first actuator to raise and lower the plate;

and

a second actuator coupled to the flipping device, the second actuator to lower and raise the lifting device.

10. (previously presented) The apparatus of claim 9, wherein the protrusions are flat at their tops.

11. (previously presented) The apparatus of claim 10, wherein the protrusions are rectangular in cross section.

12. (previously presented) The apparatus of claim 10, wherein the protrusions are square in cross section.

13. (previously presented) The apparatus of claim 9, wherein the first and second actuators are pneumatic actuators.

14. (previously presented) The apparatus of claim 9, wherein the first and second actuators are hydraulic actuators.

15. (previously presented) The apparatus of claim 9, wherein the protrusions are of sufficient height so that when the plate is raised into the bottom of the tray, the protrusions lift the substrates up off the bottom of the tray.

16. (previously presented) The apparatus of claim 9 further comprising a third actuator coupled to the lifting device, the third actuator to move the lifting device away from the tray to a different position.

17. (previously presented) The apparatus of claim 16, wherein the third actuator moves the lifting device after the lifting device has been raised back up after lifting substrates from the substrate tray.

18. (previously presented) The apparatus of claim 9 further comprising a vacuum generator coupled to the flipping device, the vacuum generator to produce a vacuum at each vacuum pad of the flipping device to form a temporary bond between the vacuum pad and the substrate.

19. (previously presented) A system for applying solder bumps to substrates in a flip chip packaging process, the system comprising:

- a loader station to load substrates into a substrate tray;

- a flipping station coupled to the loader station, the flipping station to flip substrates held in the substrate tray, the flipping station comprising:

 - a plate with a plurality of protrusions;

 - a flipping device with a plurality of vacuum pads coupled to the substrate tray, the flipping device to attach to the substrates, lift the substrates out of the substrate tray, and flip the substrates;

 - a first actuator coupled to the plate, the first actuator to raise and lower the plate;

 - a second actuator coupled to the flipping device, the second actuator to lower and raise the flipping device;

 - a solder bump application station coupled to the flipping station, the solder bump application station to apply and bond solder bumps to the substrates; and

 - wherein the first actuator raises the plate into the bottom of the substrate tray, the second actuator lowers the flipping device into the substrate tray when the substrate tray is in the flipping station.

20. (previously presented) The system of claim 19 further comprising a vacuum generator coupled to the flipping device, the vacuum generator to produce a vacuum at each vacuum pad of the flipping device to form a temporary bond between the vacuum pad and substrates.

21. (previously presented) The system of claim 20, wherein the flipped substrates are placed back into the substrate tray after being flipped by the flipping station.